(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 April 2002 (25.04.2002)

PCT

(10) International Publication Number
WO 02/33791 A1

(51) International Patent Classification[7]: H01R 25/00, 13/72

(21) International Application Number: PCT/SG01/00215

(22) International Filing Date: 19 October 2001 (19.10.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PI 20004912 19 October 2000 (19.10.2000) MY

(71) Applicant *(for all designated States except US)*: **POWER BRIDGE (SINGAPORE) PTE. LTD.** [SG/SG]; Block 209 Bukit Batok Street 21, #13-172, Singapore 650209 (SG).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **YAP, Wang, Han** [MY/MY]; 13 Jalan MP 7, Melaka Perdana Resort Homes, 75450 Air Keroh Heights, Melaka (MY).

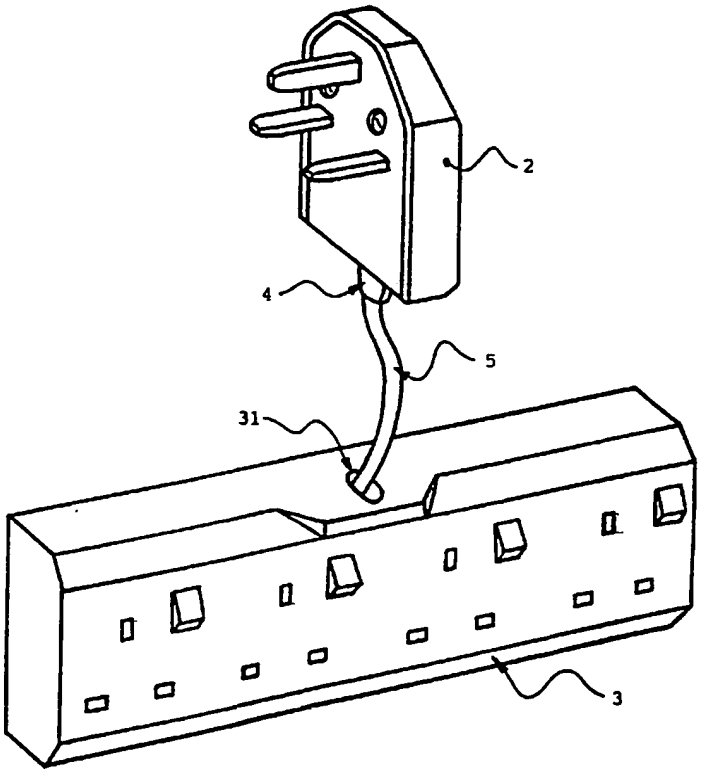
(74) Agent: **O'CONNOR, Teresa**; Infinitus Law Corporation, Raffles City Post Office, P.O. Box 259, Singapore 911709 (SG).

(81) Designated States *(national)*: AU, CA, CN, ID, JP, KR, NZ, SG, US.

(84) Designated States *(regional)*: European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

[Continued on next page]

(54) Title: AN INVERTED T-SHAPE MULTIPLE SOCKET OUTLETS DEVICE, CONVERTIBLE TO AN EXTENSION MULTIPLE SOCKET OUTLETS DEVICE



(57) Abstract: According to the invention, an inverted T-shape multiple socket outlets device comprises an electrical plug (2), an extension cable (5), and a casing (3) with multiple sockets outlets displayed on the front face. An elongated opening (31) is provided on the top wall of the casing (3). The electrical plug (2) is removably attached to the top wall of the casing (3), and the extension cable (5) is neatly tugged away in a concealed compartment in the casing (3). A flat adapter means (4) is fitted to the base of the electrical plug (2), such that the flat adapter means (4) engages the top wall of the casing (3) by assuming a right angle orientation with the length-wise direction of the elongated opening (31). Because of the space of the elongated opening (31), the inverted T-shape multiple socket outlets device is able to adjustably engage flush and nonflush panel sockets on a wall.

WO 02/33791 A1

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AU, CA, CN, ID, JP, KR, NZ, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR)*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AU, CA, CN, ID, JP, KR, NZ, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR)*

— *of inventorship (Rule 4.17(iv)) for US only*

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

AN INVERTED T-SHAPE MULTIPLE SOCKET OUTLETS DEVICE, CONVERTIBLE TO AN EXTENSION MULTIPLE SOCKET OUTLETS DEVICE

TECHNICAL FIELD

The present invention relates generally to an extension multiple socket outlets device, and particularly to an inverted T-shape multiple socket outlets device, convertible to an extension multiple socket outlets device.

BACKGROUND

Extension multiple socket outlets devices are well known electrical devices, which allow more than one socket outlet to be used at a distance from a previously designated point in the wiring circuit. There are many ways of concealing the extension chords when they are not in use. When in use, these concealed extension chords are retracted and extended from their concealment.

In an earlier Malaysian patent application, the applicant has disclosed an embodiment of an inverted T-shape multiple socket outlets device. This embodiment does not have any extension chord facility. It provides a facility of multiple socket outlets device locally at the one previously designated point in the electricity distribution circuit. Because of its integral design, the specific embodiment achieves certain advantages.

SUMMARY OF THE INVENTION

It is therefore the primary object of the present invention to offer a multiple socket outlets device which can be used at one point in the electricity distribution circuit, as well as at a distance from that point.

According to the invention, an inverted T-shape multiple socket outlets device comprises an electrical plug connectable to an extension cable which is electrically connected to a circuitry inside a casing with multiple socket outlets device. The electrical plug is removably attached to the top wall of the casing,

and the extension cable is neatly tugged away in a concealed compartment in the casing. An elongated opening is provided on the top wall. An adapter means is fitted to the base of the electrical plug, such that the adapter means is first passed through the elongated opening. The adapter means then engages the top wall of the casing when the adapter means and the plug are rotated at right angle with the length-wise direction of the elongated opening. An inverted T-shape multiple socket outlets device is then formed. Because of the space in the elongated opening, the electrical plug is able to adjustably move relative to the casing, in order to accommodate and engage flush and non-flush panel sockets on a wall.

BRIEF DESCRIPTION OF THE DRAWINGS

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1a shows a perspective view of the invention when used as an inverted T-shape multiple socket outlets device.

Figure 1b shows a perspective view of the invention as shown in Figure 1a, with an electrical plug being rotated and about to be detached from a casing.

Figure 1c shows a perspective view of the invention as shown in Figure 1a, with the electrical plug being detached and extended electrically from the casing.

Figure 2a shows a perspective view of a compartment in the casing of the invention when used as an inverted T-shape multiple socket outlets device, with an extension cable neatly tugged away.

Figure 2b shows a perspective view of the inverted T-shape multiple socket outlets device shown in Figure 2a, with the plug being extended.

Figure 3a shows in partial side view of a plug and an extension cable about to be inserted into an elongated opening on the top wall of a casing of the invention.

Figure 3b shows in partial side view how a plug is being inserted through the elongated opening on the top wall of the casing as shown in Figure 3a.

Figure 3c shows in partial side view how a plug is removably attached to the top wall of the casing as shown in Figure 3a.

Figure 4a shows a perspective view of an adapter means to be fitted to an electrical plug.

Figure 4b shows an underside view of the attachment when the plug is first inserted through the elongated opening on the top wall of the casing.

Figure 4c shows an underside view of the attachment when the plug is positioned on the casing, forming an inverted T-shape multiple socket outlets device.

Figure 5a shows a partial side view of the invention used as an inverted T-shape multiple socket outlets device about to be fitted to a non-flush panel socket with a thickness of more than 1 cm, indicating the slight movement of the adapter means within the elongated opening on the top wall of the casing.

Figure 5b shows a partial side view of the invention as shown in Figure 5a about to be fitted to a flush panel socket with a thickness of approximately 1 cm, indicating the slight movement of the adapter means within the elongated opening on the top wall of the casing.

DETAILED DESCRIPTION

In prior art extension multiple socket outlets devices, an electrical plug is connected to a circuitry inside a casing equipped with multiple socket outlets. The plug can either be 3-pin or 2-pin. The technology is well known. For the sake of simplicity, the details of this technology will not be discussed. The following description will concentrate on how an inverted T-shape multiple socket outlets device is formed and how it is converted to an extension multiple socket outlets device.

Essentially, the important components making up the invention are a rectangular casing (3) with a concealed compartment (32), an extension cable (5) and an electrical plug (2) fitted with a flat adapter means (4). An elongated opening (31) is provided on the top wall of the casing (3).

Referring to Figures 1a, 1b and 1c, the invention is shown when assembled and used as an inverted T-shape multiple socket outlets device (1). On the front of the casing (3), four socket outlets are provided. The electrical plug (2) is electrically connected to the casing (3). The plug (2) is disposed on the top wall of the casing (3). The pins of the plug (2) face towards the back of the casing (3) away from the socket-bearing front face, when the plug (2) is oriented and assembled to form an inverted T-shape multiple socket outlets device (1). It is important to note that the length-wise direction of the elongated opening (31) is at right angle to the length-wise direction of the top wall. To engage the top wall of the casing (3), the flat adapter means (4) at the base of the plug (2) engages the top wall of the casing (3) and is oriented at right angle to the length-wise direction of the elongated opening (31). To disengage from the top wall of the casing (3), the flat adapter means (4) is oriented parallel to the length-wise direction of the elongated opening (31).

Referring to Figures 2a and 2b, one end of an extension cable (5) is connected to the plug (2), and the other end of the cable (5) is connected to the electrical distribution circuitry inside the casing (3). A compartment (32) is provided in the casing (3) to conceal the extension cable (5). Mounting means (33) in the form of parallel clips are also provided, so that the cable (5) is neatly tugged away. The length of the elongated opening (31) is indicated as L1 and the width is indicated as W1. W1 is smaller than L1.

Referring to Figures 3a, 3b, 3c, 4a, 4b, and 4c, it is clearly illustrated how the plug (2) is inserted and attached to the casing (3) with the assistance of a flat adapter means (4). Essentially, the flat adapter means (4) comprises integrally a neck portion (41) and an enlarged body portion, and the adapter means (4) is fitted to the base of the plug (2). The length (L2) of the flat adapter means (4) is

slightly smaller than the length (L1) of the elongated opening (31). The width (W2) of the flat adapter means (4) is smaller than the width (W1) of the elongated opening (31). These dimensions allow the adapter means (4) to "sink" into the casing (3) through the elongated opening (31). The length (T2) of the neck portion (41) is slightly greater than the thickness (T1) of the top wall of the casing (3). The length (L2) of the flat adapter means (4) is greater than the width (W1) of the elongated opening (31). When the flat adapter means (4) engages the top wall of the casing (3) and assumes a right angle orientation with the length-wise direction of the elongated opening (31), the flat adapter means (4) forms preferably an interference fit with the top wall. The assembly is thus achieved.

The elongated opening (31) on the top wall of the casing (3) provides a further advantage. As the length-wise direction of the elongated opening (31) is oriented at right angle to the length-wise direction of the top wall of the casing (3), and the plug (2) is disposed parallel to the casing (3), there is certain space within the elongated opening (31) to allow a slight transverse movement of the plug (2). Referring to Figure 5a, the invention is about to be fitted to a non-flush panel socket (6) with a thickness of more than 1 cm. Referring to Figure 5b, the invention is about to be fitted to a flush panel socket (7) with a thickness of approximately 1 cm.

According to the teaching of the invention, the device is incorporated with other electrical features including surge protection, or timer, or lightning protection.

CLAIMS

1) A multiple socket outlets device, comprising an electrical plug (2), an extension cable (5), and a casing (3) integrally and electrically fitted with multiple socket outlets displayed on one face, is characterised in which the electrical plug (2) is removably attached to the top wall of the casing (3) thus forming an inverted T-shape multiple socket outlets device (1) and the extension cable (5) is neatly tugged away in a concealed compartment (32) in the casing (3).

2) An inverted T-shape multiple socket outlets device (1) with extendible extension cable (5) as in Claim 1 is characterised in which an elongated opening (31) is provided on the top wall of the casing (3).

3) An inverted T-shape multiple socket outlets device (1) with extendible extension cable (5) as in Claim 1 is characterised in which a flat adapter means (4) comprises integrally a neck portion (41) and an enlarged body portion, and the flat adapter means (4) is fitted to the base of the electrical plug (2).

4) An inverted T-shape multiple socket outlets device (1) with extendible extension cable (5) as in Claim 3 is characterised in which the adapter means (4) engages the top wall of the casing (3) in an interference fit, when assuming a right angle orientation to the length-wise direction of said elongated opening (31) on the top wall.

5) An inverted T-shape multiple socket outlets device (1) with extendible extension cable (5) as in Claim 1 is characterised in which the inverted T-shape multiple socket outlets device (1) is used without the extension cable (5) being extended.

6) An inverted T-shape multiple socket outlets device (1) with extendible extension cable (5) as in Claim 1 is characterised in which the inverted T-shape multiple socket outlets device (1) is dismantled when the extension

cable (5) is retracted from the concealed compartment (32), and it is used as an extension multiple socket outlets device (1).

7) An inverted T-shape multiple socket outlets device (1) with extendible extension cable (5) as in Claim 1 is characterised in which the inverted T-shape multiple socket outlets device (1) can be used to fit onto a non-flush panel socket (6) with a thickness of more than 1 cm, or a flush panel socket (7) with a thickness of approximately 1 cm.

8) An inverted T-shape multiple socket outlets device (1) with extendible extension cable (5) as in Claim 1 is characterised in which the plug (2) can either be 3-pin or 2-pin.

9) An inverted T-shape multiple socket outlets device (1) with extendible extension cable (5) as in Claim 1 is characterised in which the device (1) is incorporated with other electrical features including surge protection, or timer or lightning protection.

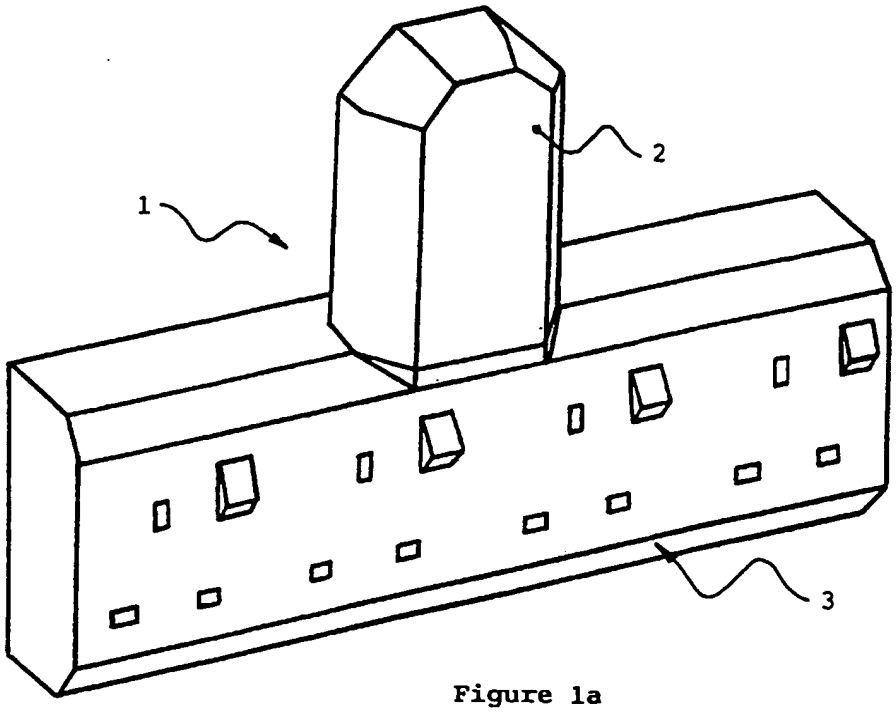


Figure 1a

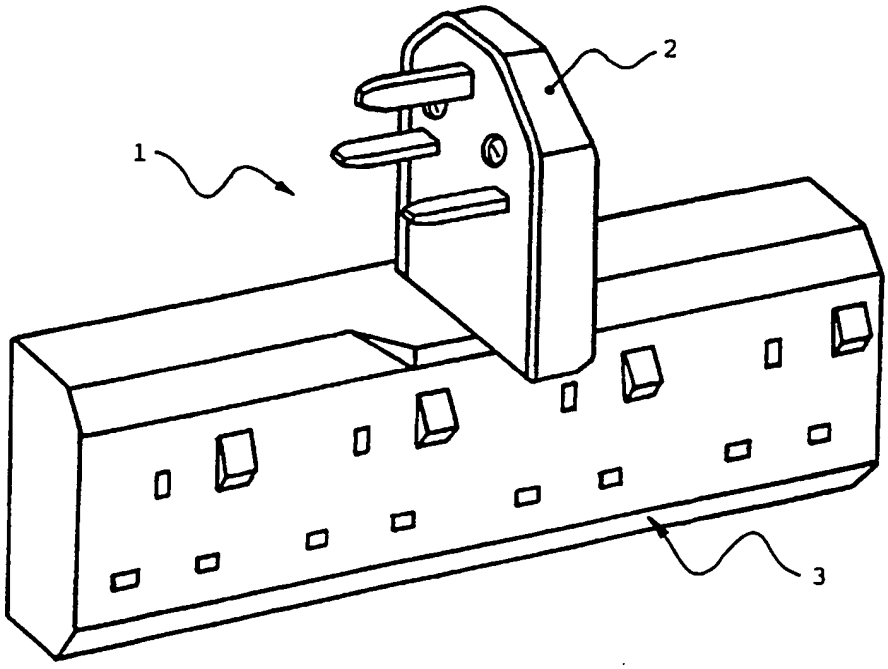


Figure 1b

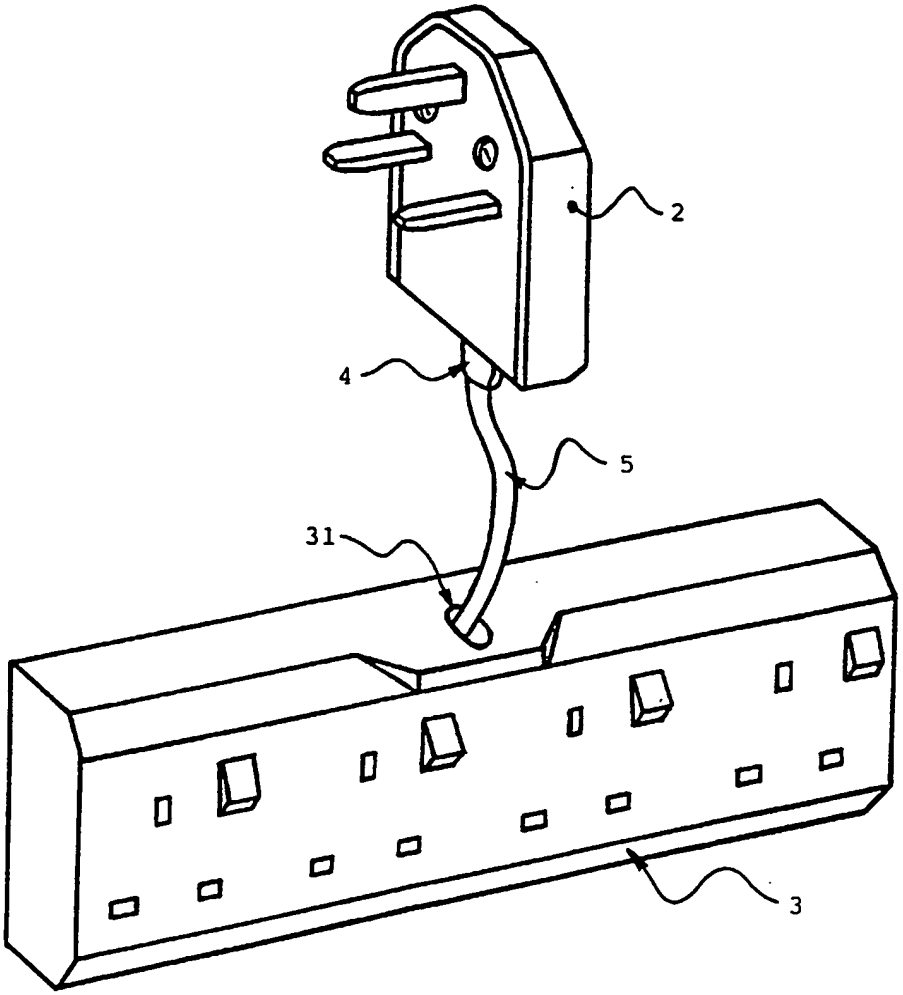


Figure 1c

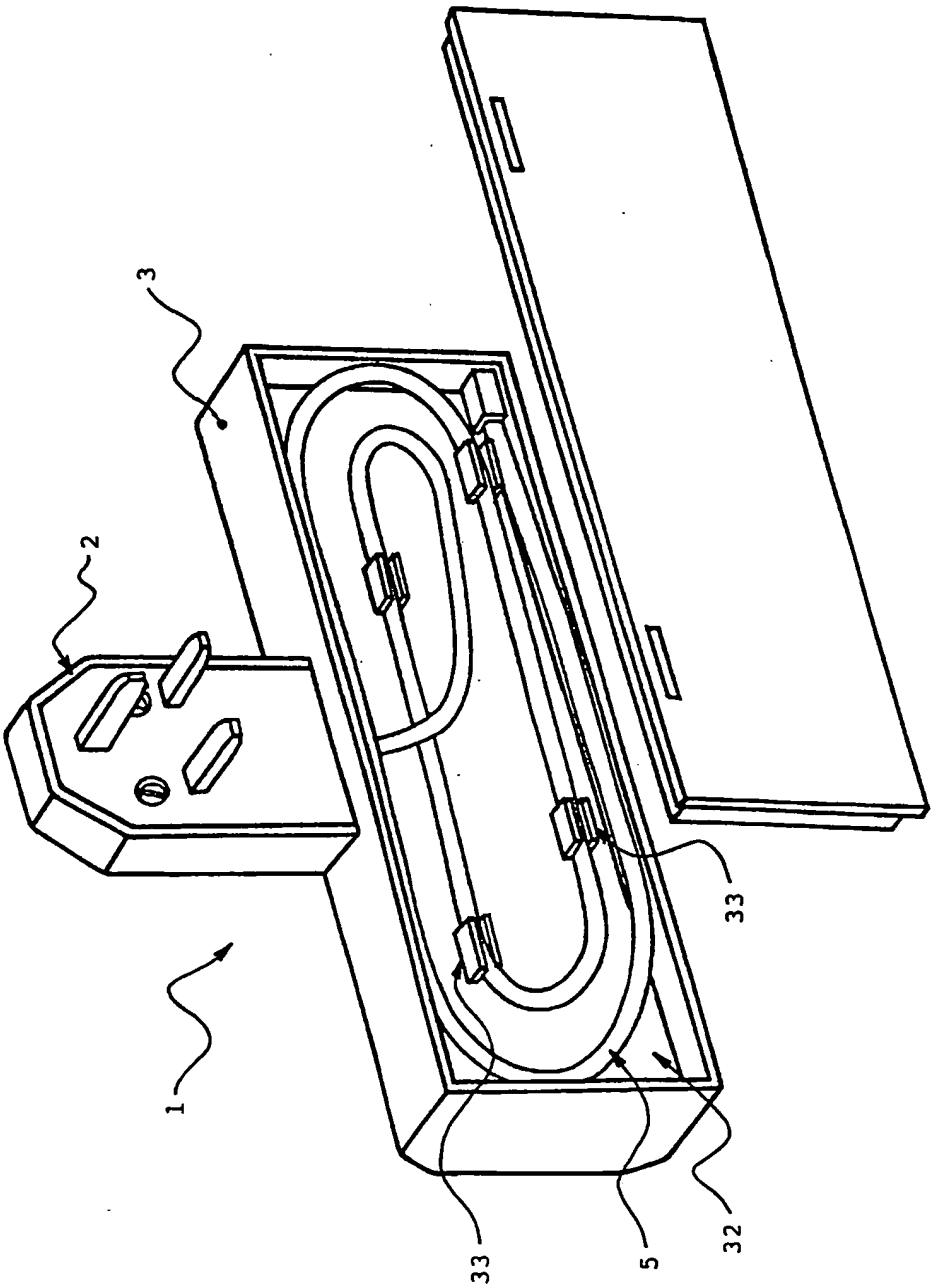


Figure 2a

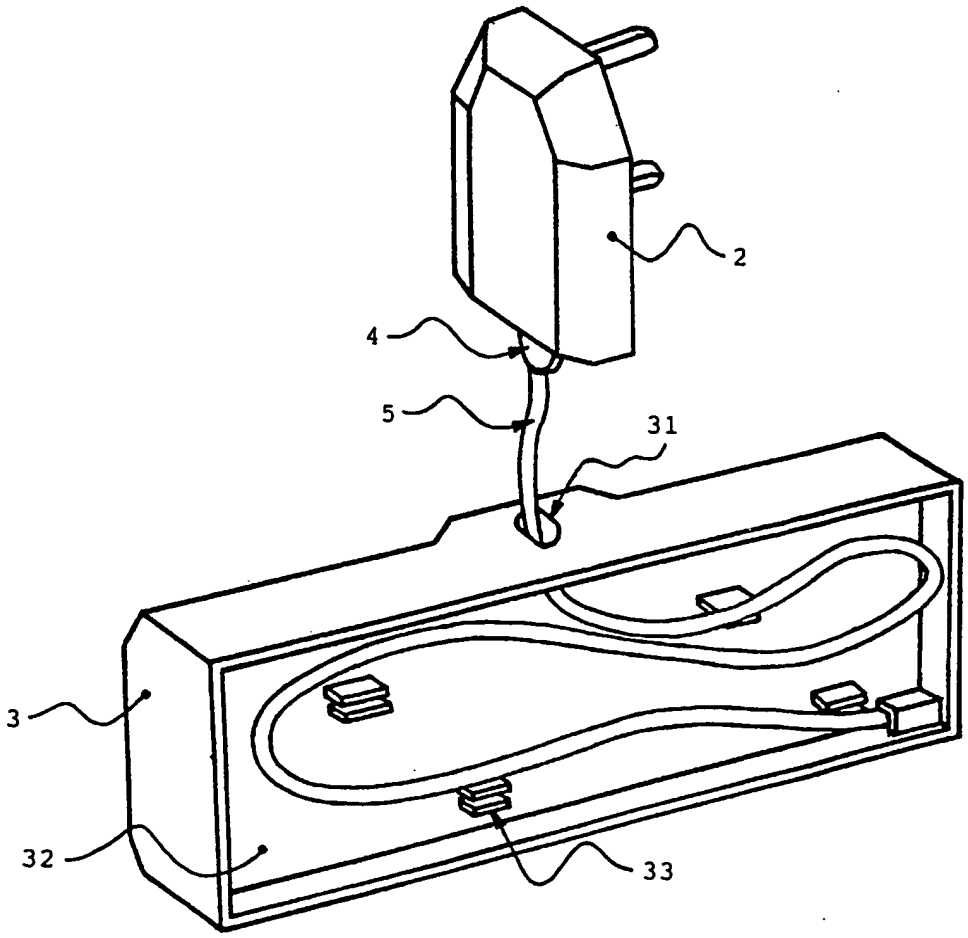


Figure 2b

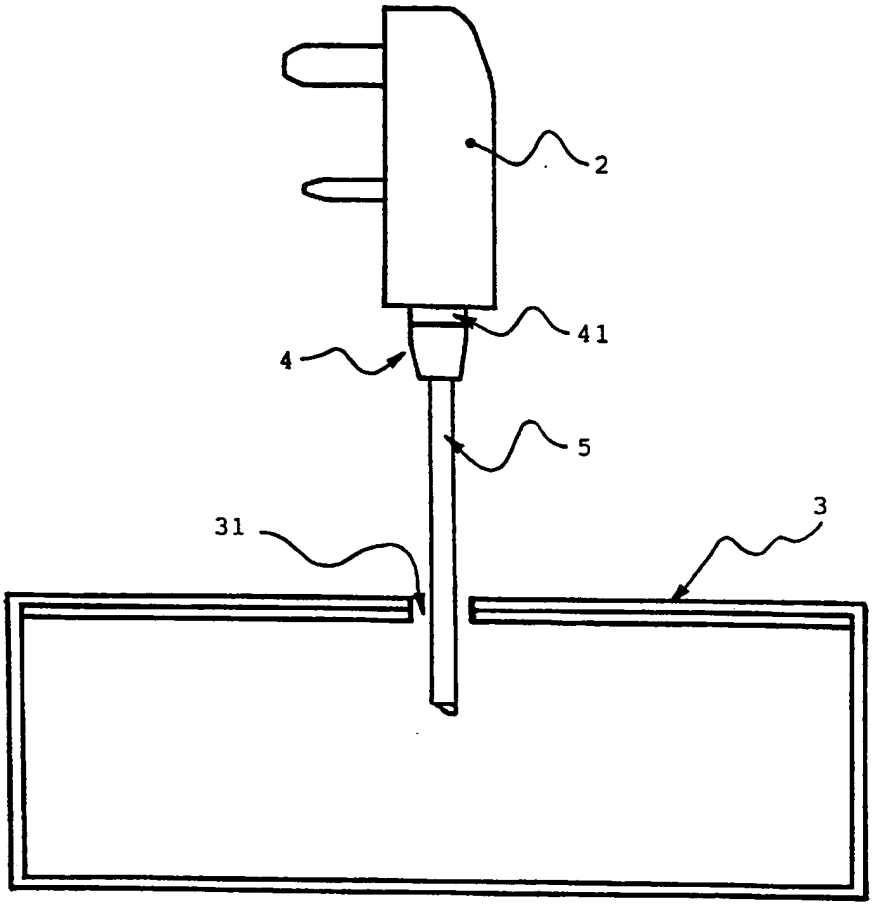


Figure 3a

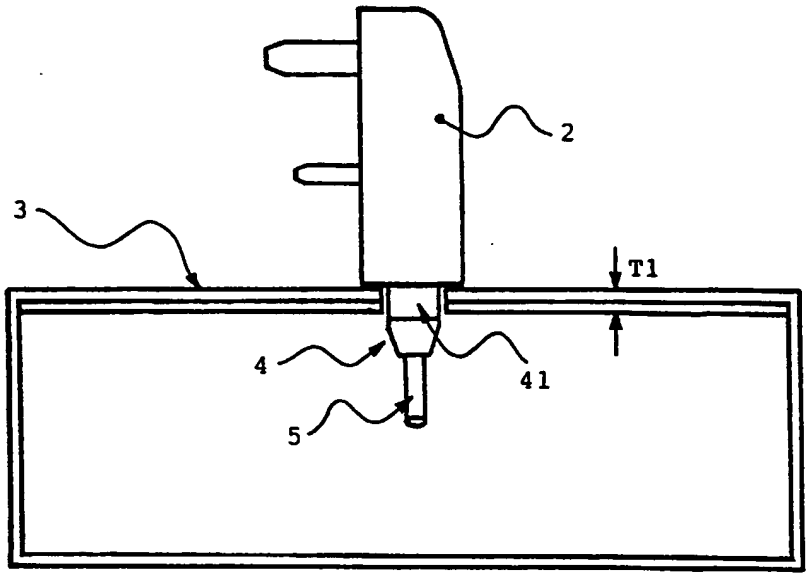


Figure 3b

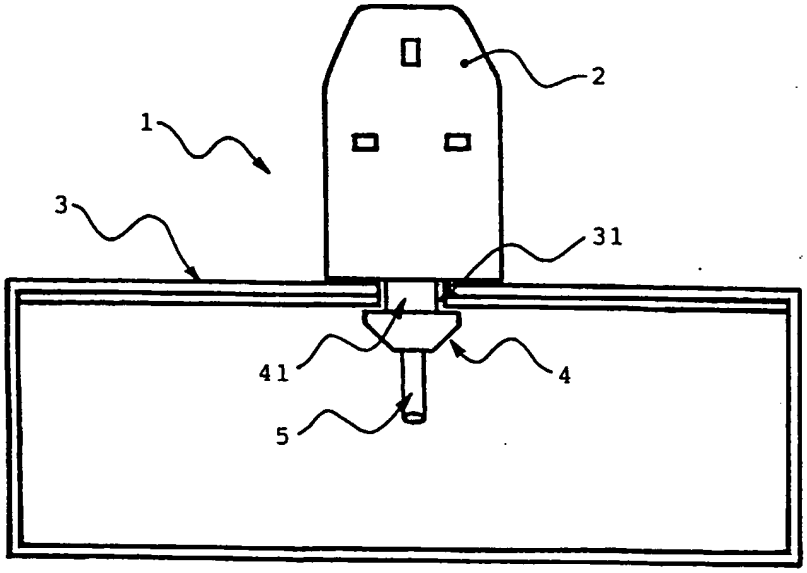


Figure 3c

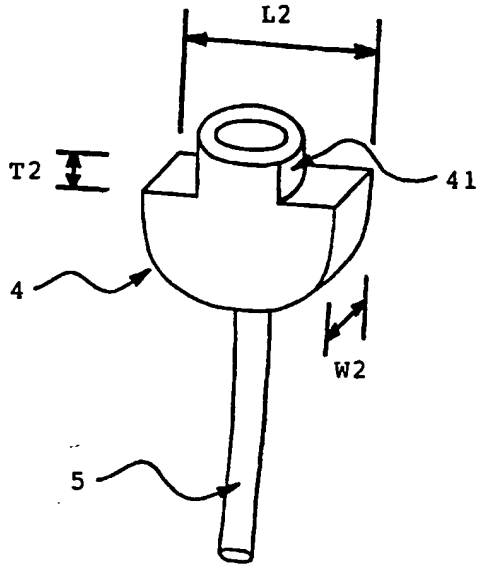


Figure 4a

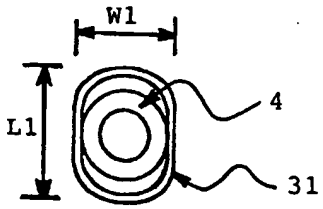


Figure 4b

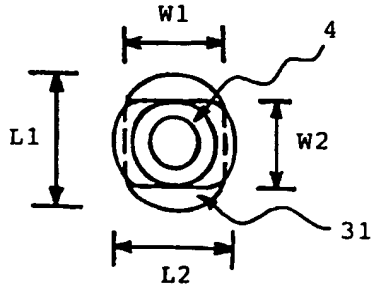


Figure 4c

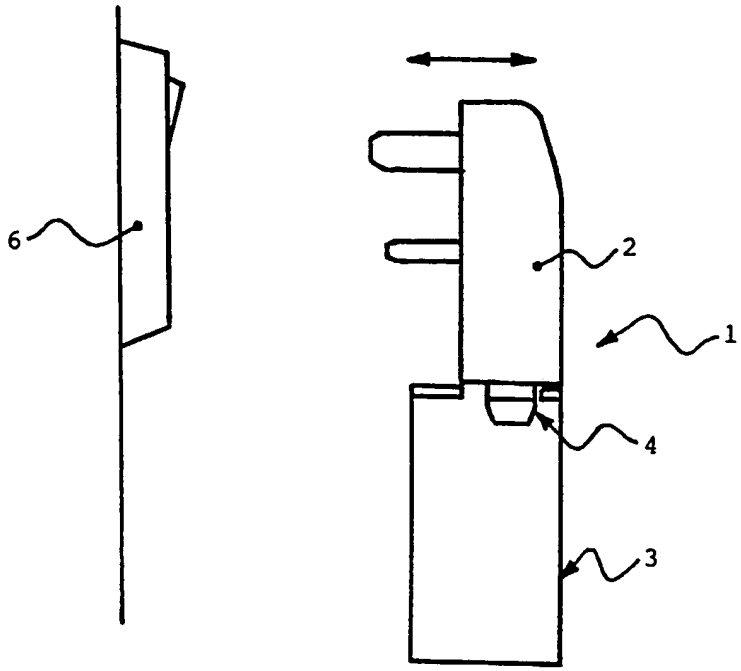


Figure 5a

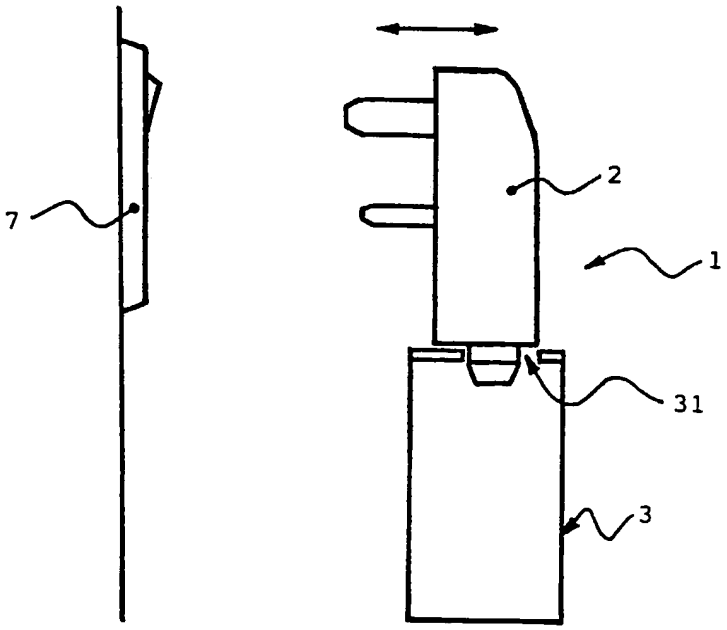


Figure 5b

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SG 01/00215

CLASSIFICATION OF SUBJECT MATTER

IPC[7]: H01R 25/00, 13/72

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC[7]: H01R 13/72, 25/00, 27/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6077109 A (PRAZOFF M.) 20 June 2000 (20.06.00) *figures 1 and 2 and description of figures.*	1
A	EP 0802585 A1 (LEGRAND et al) 22 October 1997 (22.10.97) *figures 2 and 7 and description of figures.*	1

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
„A" document defining the general state of the art which is not considered to be of particular relevance
„E" earlier application or patent but published on or after the international filing date
„L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
„O" document referring to an oral disclosure, use, exhibition or other means
„P" document published prior to the international filing date but later than the priority date claimed
„T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
„X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
„Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
„&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
4 January 2002 (04.01.2002)	21 January 2002 (21.01.2002)
Name and mailing adress of the ISA/AT Austrian Patent Office Kohlmarkt 8-10; A-1014 Vienna Facsimile No. 1/53424/535	Authorized officer KOSKARTI Telephone No. 1/53424/326

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/SG 01/00215

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
EP	A1	802585	22-10-1997	FR	A1	2747875	24-10-1997
				FR	B1	2747875	03-07-1998
				HU	A0	9700763	28-05-1997
				HU	AB	9700763	28-01-1998
				PL	A1	319474	27-10-1997
US	A	6077109	20-06-2000			none	